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D202

6U CompactPCI®
Carrier Board for
PC•MIPs

User Manual

20D202-00 E2

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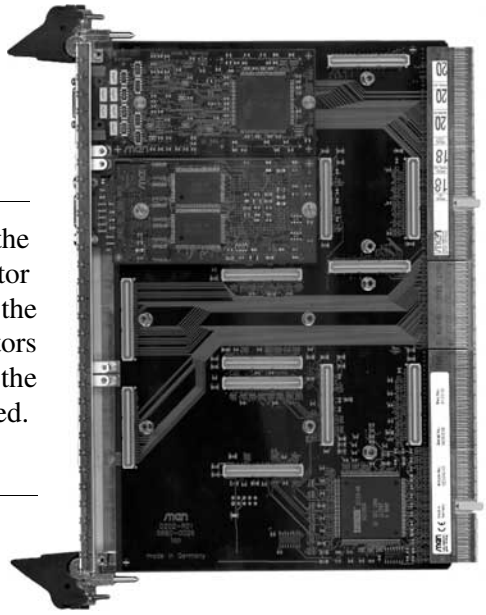
D202 - 6U CompactPCI® Carrier Board for PC•MIP™

PC•MIP Type I/Type II Support

The D202 is a 6U CompactPCI carrier board for up to six PC•MIP modules. It supports four Type-I/II PC•MIPs and two Type-I PC•MIPs (without front-panel connector). Even if equipped with six PC•MIPs, the carrier needs only one slot on the CompactPCI bus.

Mapping of I/O Signals to CompactPCI

All PC•MIP I/Os on J3 of a PC•MIP are mapped to CompactPCI connectors J3, J4 or J5. The mapping is standardized.



Installation

The PC•MIPs are tightly installed on the carrier board through an injector/ejector mechanism with two captive screws on the carrier. While self-aligning the connectors when being tightened, the screws will push the PC•MIP out of the connectors when loosened.

Fast and Flexible

PC•MIPs are an ideal solution for flexible and fast CPU-related applications, which can make advantage out of the internal PCI bus of the PC•MIPs.

Technical Data

CompactPCI Bus:

- compliance with CompactPCI Specification 2.0 R2.1
- only one slot required on the 6U CompactPCI bus
- DECchip 21150 PCI-to-PCI bridge
  - target and/or initiator on PCI bus
  - max. clock frequency 33MHz
  - power supply 5V and 3.3V
- compliance with PCI Specification 2.1
- 32-bit PCI data bus

PC•MIPs:

- up to six PC•MIP modules on one board
- support of 2 Type I and 4 Type II modules
- local 32-bit PCI bus

Peripheral Connections:

- via front panel
- via CompactPCI J3/J4/J5

Electrical Specifications:

- supply voltage/power consumption:
  - +5V (4.85V..5.25V) @ 5mA typ.
  - +3.3V @ 150mA typ.
- MTBF: 80,000h @ 50°C

Mechanical Specifications:

- dimensions: conforming to CompactPCI specification for 6U boards
- front panel: aluminum with 2 handles
- weight: 320g

Environmental Specifications:

- temperature range (operation): 0..+60°C
  (industrial temperature range on request)
- temperature range (storage): -40..+85°C
- relative humidity range (operation): max. 95% non-condensing
- relative humidity range (storage): max. 95% non-condensing
- altitude: -300m to + 3,000m
- shock: 15g/0.33ms, 6g/6ms
- vibration: 1g/5..2,000Hz

Safety:

- PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers

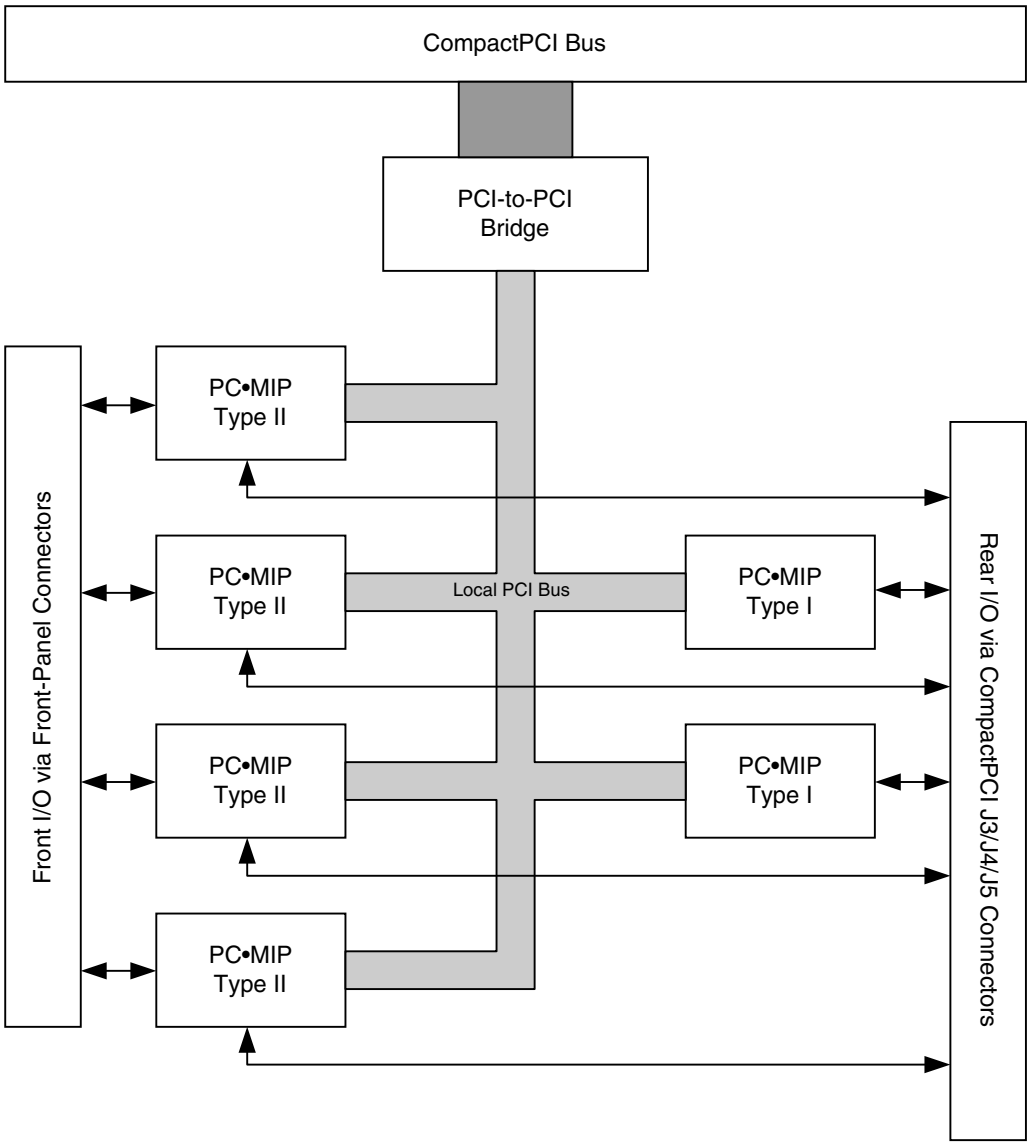
EMC:

- tested according to IEC1000-4-2 (burst) and IEC1000-4-4 (ESD) with regard to CE conformity

Software Support:

- PC•MIP driver software for WindowsNT®, VxWorks® and OS-9®

Block Diagram



Ordering Information

Standard Hardware

02D202-00	D202 PC•MIP carrier board

Rear I/O Adapter

08CT01-00	CT01, 6U CompactPCI transition module 6U/80mm, six 50-pin and four 68-pin ribbon-cable connectors

User Manuals

20D202-00	D202 user manual
20CT01-00	CT01 user manual

About the Manual

This user manual describes the hardware functions of the carrier board, connection of peripheral devices and integration into a system. It also provides additional information for special applications and configurations of the board.

The manual does not include detailed information on individual components (data sheets etc.). A list of literature is given in the appendix.

History

Edition	Description	Technical Content	Date of Issue
E1	First edition	Peter Marek	August 24, 1998
E2	Second edition	Jonny Speckner	December 16, 1999

Conventions

This sign marks important notes or warnings concerning proper functionality of the product described in this manual. You should read them in any case.

italics — Folder and file names are printed in *italics*.

bold — **Bold** type is used for emphasis.

hyperlink — Hyperlinks are printed in blue color.

`0xFF` — Hexadecimal numbers are preceded by "0x", which is the usual C-language convention, and are printed in a monospace type, e.g. `0x00FFFF`.

IRQ# — Signal names followed by "#" indicate that this signal is either active low or that it becomes active at a falling edge.

in/out — Signal directions in signal mnemonics tables generally refer to the corresponding board or component, "in" meaning "to the board or component", "out" meaning "coming from it".

Vertical lines on the outer margin signal technical changes to the previous edition of the manual.

Short Glossary of PC•MIP Terms

For a complete glossary of PC•MIP terms and definitions, please refer to the PC•MIP specification.

Connector-side

The surface of the PC•MIP module that faces the carrier board when installed. This face is opposite the label-side.

J1, J2

J1 and J2 are two 64-pin receptacle connectors on the PC•MIP module that carry the 32-bit PCI bus via which the carrier and the module communicate. J1 and J2 mate to P1 and P2 on the carrier board respectively.

J3

J3 is the 64-pin I/O receptacle connector between the module and the carrier board. 14 ground pins are defined on this connector by the specification, but the remaining 50 pin functions are defined by each module. J3 mates to P3 on the carrier board.

J4

J4 is a term reserved for the "front panel" I/O connector on type II PC•MIP modules, but not on type I modules. The selection of the physical connector is left to manufacturer of the type II module, and is not defined in the specification. J4 typically mates to a an equivalent P4 connector on a cable.

Label-side

The surface of the PC•MIP module that is visible when the module is installed on a carrier board. This face is opposite the connector-side.

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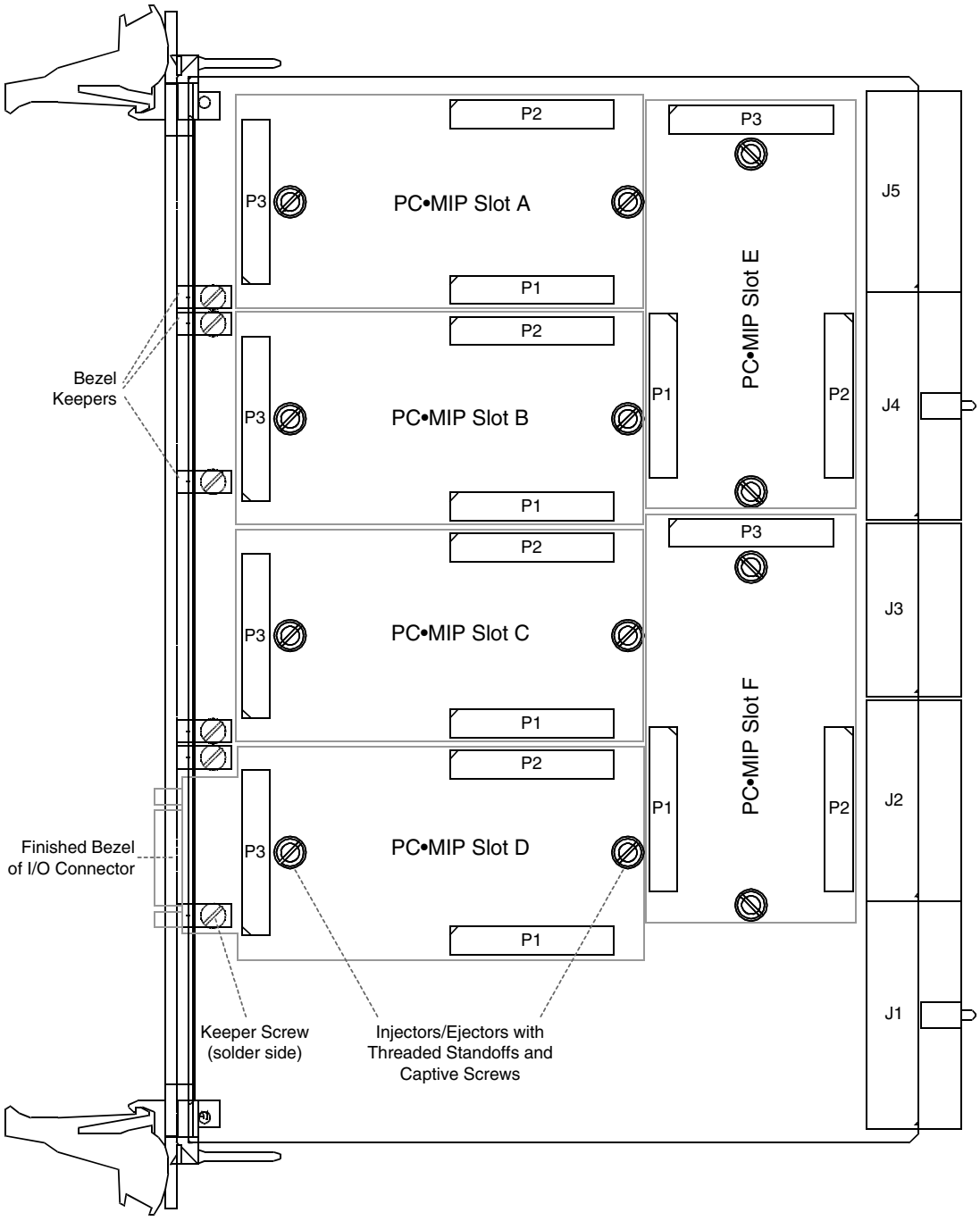
1 Getting Started

This chapter will give an overview of the carrier board and some hints for first installation in a system as a "check list".

1.1 Map of the Board

Figure 1: Map of the Board - Top View



1.2 Installation Check List

You can use the following "check list" when installing the D202 in a CompactPCI system for the first time.

Note: The D202 **must not** be inserted into the system slot! The system slot of every CompactPCI system is marked by a △ triangle on the backplane and/or at the front panel. It also has red guide rails.

- ☑ Power-down the system.
- ☑ Install a PC•MIP as described below.
- ☑ Insert the D202 into your CompactPCI system, making sure that the Compact-PCI connectors are properly aligned.
- ☑ Power-up the system.
- ☑ You can now install driver software for the PC•MIPs on the carrier board.

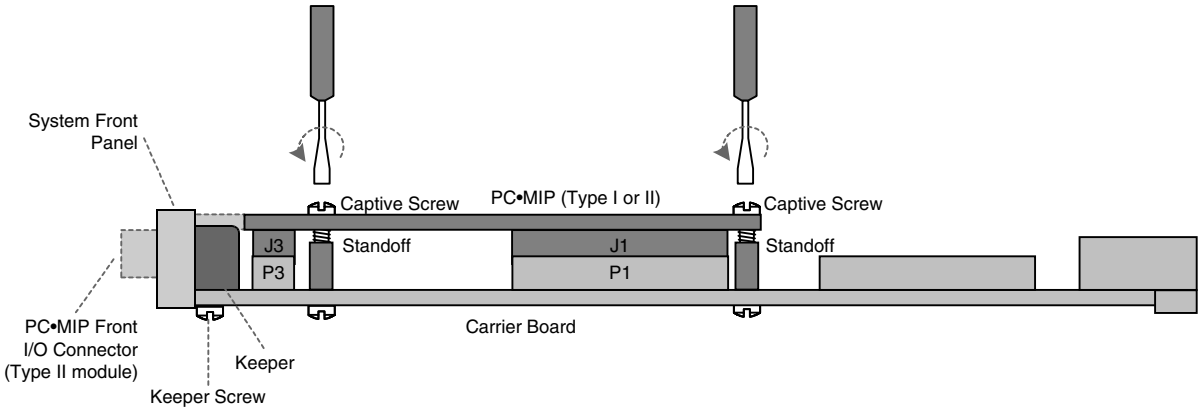
1.3 Installing PC•MIPs

Note: It is possible to plug Type-I modules on Type-II slots. However, you cannot do this vice versa, since the front connectors of Type-II modules would collide with neighboring modules or with the enclosure.

Perform the following steps to install a PC•MIP:

- ☑ Power down your system and remove the D202 from the system.
- ☑ If you want to install a Type-II PC•MIP (with front connector), you must remove the blank bezel at the front panel of the D202 first:
  Remove the respective bezel keeper by loosening the keeper screw at the solder side of the D202. (See Figure 1, Map of the Board - Top View, on page 8).
- ☑ Place the finished bezel supplied with your PC•MIP in the front panel cut-out and reinstall the bezel keeper.
- ☑ If you are installing a Type-II PC•MIP, carefully put the module's front connector through the finished bezel, holding the module at a 45° angle.
- ☑ Place the PC•MIP on the target slot of the D202, aligning the two connectors (P1/J1, P2/J2) and the two standoffs.
- ☑ Screw the PC•MIP to the carrier by **alternately** tightening the two captive screws on the label side of the PC•MIP. The module will be "injected" safely.

Figure 2: Installation of a PC•MIP



To deinstall PC•MIPs from the carrier board, just loosen the appropriate screws at the label side of the PC•MIP. The injector/ejector system will "eject" the PC•MIP.

1.4 Installing Driver Software

For a detailed description on how to install driver software please refer to the respective PC•MIP software manual or MEN's general online MDIS documentation "MDIS 4 - MEN Driver Interface System, The Complete User Guide". The MDIS guide is named *21m00007.pdf* and is provided with any of MEN's operating-system specific MDIS software packages.

2 Functional Description

2.1 Power Supply

Power supply is fed via the CompactPCI backplane. The board operates on +5V and 3.3V, i.e. you must supply +3.3V. You need to supply +12V/-12V only if required by one of the PC•MIPs installed. Power consumption is 400mA max. plus the current drawn by PC•MIPs stacked on the carrier board.

2.2 CompactPCI Interface

The D202 carrier board has a 32-bit CompactPCI interface on connectors J1/J2. It supports universal signaling voltage on CompactPCI. For a pinout of the 32-bit CompactPCI interface on J1/J2 and a general description of ComapctPCI, please refer to the CompactPCI specification.

Connector types of J1/J2:

- 110-pin shielded, 2mm-pitch, 5-row receptacle according to IEC 917 and IEC 1076-4-101

The interface is implemented using a DEC DS21150 PCI target interface from Intel. This device complies with the PCI Specification Rev. 2.1 and is able to perform zero wait state transfers over the CompactPCI bus.

2.3 PC•MIP Connectors

PC•MIP modules connect to the D202's PCI bus via the two identical 64-pin connectors P1 and P2. The connector layout is fully compatible to the PC•MIP specification and will not be repeated here.

The I/O connection with the carrier is via a third, identical 64-pin connector: P3. The signals of this connector are mapped to CompactPCI connectors J3, J4 and J5 (see Chapter 2.4 PC•MIP Rear I/O Mapping on page 12).

Connector types of P1, P2 and P3:

- 64-pin plug connector according to IEEE P1386, e.g. Molex 71436-0164
- mating connector:
  64-pin receptacle connector according to IEEE P1386, e.g. Molex 71439-0164

2.4 PC•MIP Rear I/O Mapping

The I/O signals of all six PC•MIP slots are mapped to CompactPCI connectors J3, J4 and J5.

Connector types of J3/J4/J5:

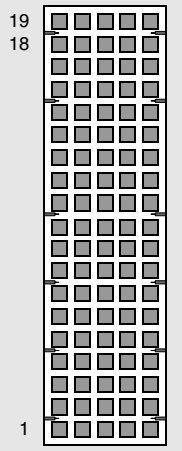
- 95-pin/110-pin shielded, 2mm-pitch, 5-row receptacle according to IEC 917 and IEC 1076-4-101

Table 1: PC•MIP Rear I/O Mapping

PC•MIP Slot	CompactPCI
A	J5, rows 11..1
B	J4, rows 25..15
C	J3, rows 19..9
D	J3, rows 8..1
E	J5, rows 22..12
F	J4, rows 11..1

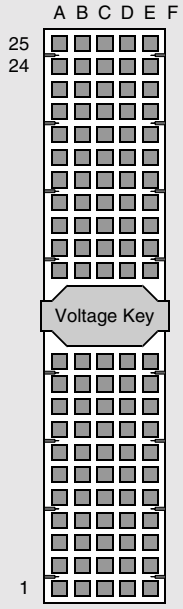
Note: The I/O lines of slot D cannot be fully mapped due to a lack of pins on the CompactPCI connectors. Consequently, this socket should be preferred for use with PC•MIPs using front panel I/O or no I/O at all.

Table 2: Pin Assignment of CompactPCI J3 (95-pin type "B" modified)



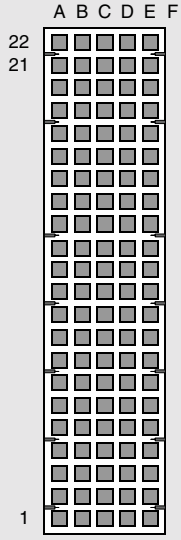
	A	B	C	D	E	F
19	C50	C49	C48	C47	C46	GND
18	C45	C44	C43	C42	C41	GND
17	C40	C39	C38	C37	C36	GND
16	C35	C34	C33	C32	C31	GND
15	C30	C29	C28	C27	C26	GND
14	C25	C24	C23	C22	C21	GND
13	C20	C19	C18	C17	C16	GND
12	C15	C14	C13	C12	C11	GND
11	C10	C9	C8	C7	C6	GND
10	C5	C4	C3	C2	C1	GND
9	+3.3V	+3.3V	+3.3V	+5V	+5V	GND
8	D35	D34	D33	D32	D31	GND
7	D30	D29	D28	D27	D26	GND
6	D25	D24	D23	D22	D21	GND
5	D20	D19	D18	D17	D16	GND
4	D15	D14	D13	D12	D11	GND
3	D10	D9	D8	D7	D6	GND
2	D5	D4	D3	D2	D1	GND
1	+3.3V	+3.3V	+3.3V	+5V	+5V	GND

Table 3: Pin Assignment of CompactPCI J4 (110-pin type "A")



	A	B	C	D	E	F
25	B50	B49	B48	B47	B46	GND
24	B45	B44	B43	B42	B41	GND
23	B40	B39	B38	B37	B36	GND
22	B35	B34	B33	B32	B31	GND
21	B30	B29	B28	B27	B26	GND
20	B25	B24	B23	B22	B21	GND
19	B20	B19	B18	B17	B16	GND
18	B15	B14	B13	B12	B11	GND
17	B10	B9	B8	B7	B6	GND
16	B5	B4	B3	B2	B1	GND
15	+3.3V	+3.3V	+3.3V	+5V	+5V	GND
	Voltage Key					
11	F50	F49	F48	F47	F46	GND
10	F45	F44	F43	F42	F41	GND
9	F40	F39	F38	F37	F36	GND
8	F35	F34	F33	F32	F31	GND
7	F30	F29	F28	F27	F26	GND
6	F25	F24	F23	F22	F21	GND
5	F20	F19	F18	F17	F16	GND
4	F15	F14	F13	F12	F11	GND
3	F10	F9	F8	F7	F6	GND
2	F5	F4	F3	F2	F1	GND
1	+3.3V	+3.3V	+3.3V	+5V	+5V	GND

Table 4: Pin Assignment of CompactPCI J5 (110-pin type "B" modified)



	A	B	C	D	E	F
22	E50	E49	E48	E47	E46	GND
21	E45	E44	E43	E42	E41	GND
20	E40	E39	E38	E37	E36	GND
19	E35	E34	E33	E32	E31	GND
18	E30	E29	E28	E27	E26	GND
17	E25	E24	E23	E22	E21	GND
16	E20	E19	E18	E17	E16	GND
15	E15	E14	E13	E12	E11	GND
14	E10	E9	E8	E7	E6	GND
13	E5	E4	E3	E2	E1	GND
12	+3.3V	+3.3V	+3.3V	+5V	+5V	GND
11	A50	A49	A48	A47	A46	GND
10	A45	A44	A43	A42	A41	GND
9	A40	A39	A38	A37	A36	GND
8	A35	A34	A33	A32	A31	GND
7	A30	A29	A28	A27	A26	GND
6	A25	A24	A23	A22	A21	GND
5	A20	A19	A18	A17	A16	GND
4	A15	A14	A13	A12	A11	GND
3	A10	A9	A8	A7	A6	GND
2	A5	A4	A3	A2	A1	GND
1	+3.3V	+3.3V	+3.3V	+5V	+5V	GND

Table 5: Signal Mnemonics for CompactPCI J3, J4 and J5

Signal	Direction	Function
+3.3V	-	+3.3V power supply
+5V	-	+5V power supply
GND	-	logic ground
C[50:1]	in/out	PC•MIP C rear panel I/Os [50:1]
D[35:1]	in/out	PC•MIP D rear panel I/Os [35:1]
B[50:1]	in/out	PC•MIP B rear panel I/Os [50:1]
F[50:1]	in/out	PC•MIP F rear panel I/Os [50:1]
E[50:1]	in/out	PC•MIP E rear panel I/Os [50:1]
A[50:1]	in/out	PC•MIP A rear panel I/Os [50:1]

3 Organization of the Board

Table 6: Device Numbers on Local PCI Bus

Device Number	PC•MIP Slot
0x0A	F
0x0B	E
0x0C	A
0x0D	B
0x0E	C
0x0F	D

Note: With some CPU boards that have PCI-to-PCI bridges there may be problems if there are several D202 boards in the system. This is due to the BIOS on the CPU board and not the D202! Please contact the respective CPU manufacturer for a BIOS update.
There are no problems with MEN's CPU boards!

4 Appendix

4.1 Literature

- PC•MIP Draft Standard:
  draft standard ANSI/VITA 29;
  VMEbus International Trade Association
  7825 E. Gelding Dr., Ste. 104,
  Scottsdale, AZ 85260
  WWW: http://www.vita.com

  You can download the latest draft specification also from MEN's web site:
  http://www.men.de.

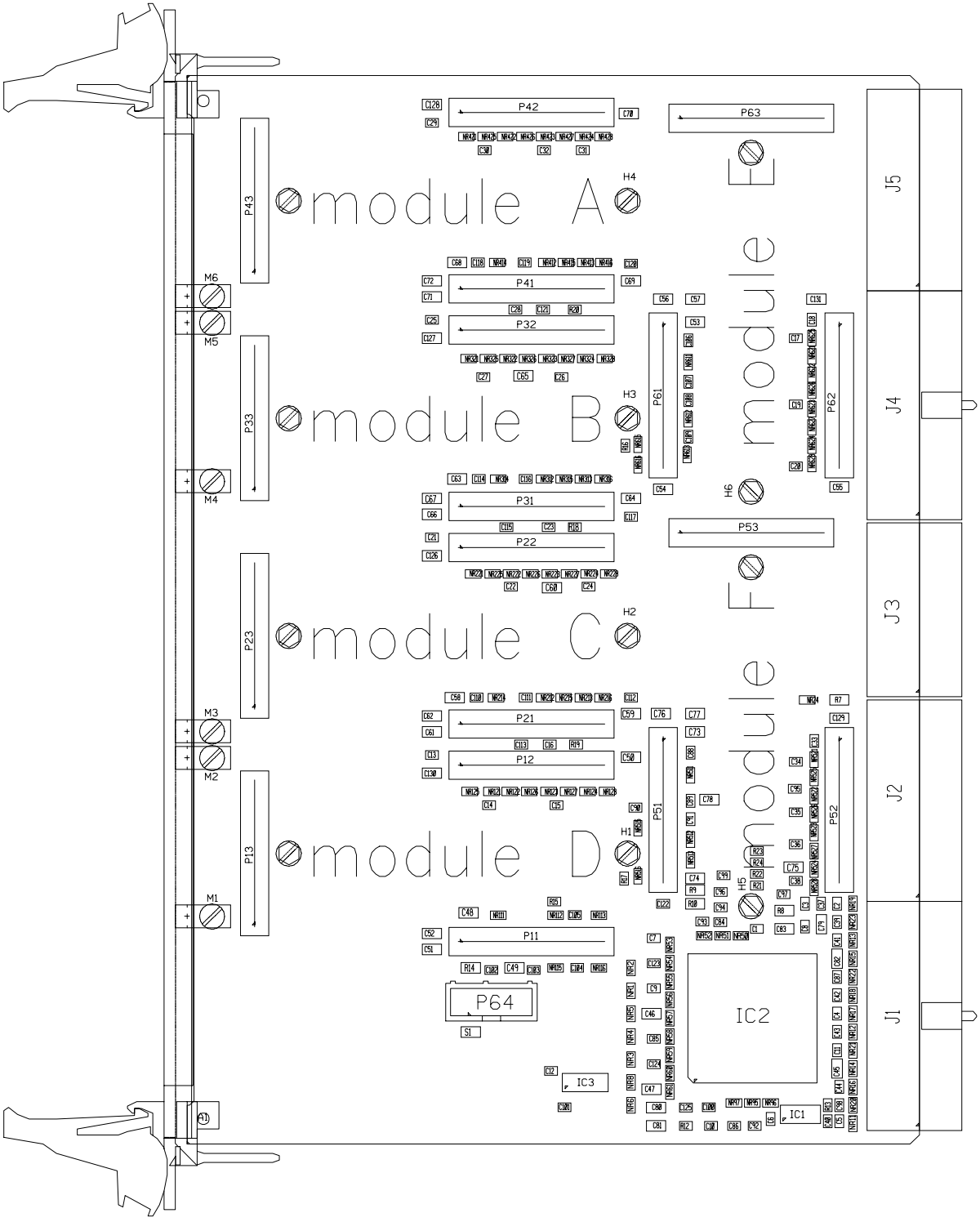
4.2 Board Revisions

Table 7: Table of Hardware Revisions

Revision	Comment	Restrictions
00.xx	first revision	none known
01.xx	second revision	none known

4.3 Configuration Plan

Figure 3: Configuration Plan of D202 Rev. 01



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and

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_____
_____
_____

("**Recipient**")

We confirm the following Agreement:

MEN		**Recipient**	
Date:	_____	Date:	_____
Name:	_____	Name:	_____
Function:	_____	Function:	_____

Signature: _____

Signature: _____

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7 General

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This Agreement is only effective if signed by both parties.

Amendments to this Agreement can be adopted only in writing. There are no supplementary oral agreements.

This Agreement shall be governed by German Law.

The court of jurisdiction shall be Nuremberg.

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Company	_____	**Fax No.**	_____
Department	_____	**E-mail**	_____

What we can do for you...

Product Support

Product Article No. _____

Revision __ __ . __ __ . __ __

If the product is a mezzanine module:

Carrier Article No. _____

Revision __ __ . __ __ . __ __

Operating system

- ❍ OS-9
- ❍ VxWorks
- ❍ WindowsNT
- ❍ other:

_____

Manual Feedback

Manual Article No. _____

Edition E ___

Useful or awful?

very useful ❍ ❍ ❍ ❍ ❍ totally awful

Usage

- ❑ I read the manual and decided to buy the related product.
- ❑ I read the manual when I got the product.
- ❑ I referred to the manual only when I had installation problems.

Your problems/comments...

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